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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/595,804	06/16/2000	Eric C. Hannah	INTL-0372-US (P8591)	3494

21906 7590 02/06/2004

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EXAMINER

BOWES, SARA E

ART UNIT	PAPER NUMBER
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2136

DATE MAILED: 02/06/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

7

Office Action Summary

Application No.

09/595,804

Applicant(s)

HANNAH ET AL.

Examiner

Sara Bowes

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/15/04.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Status of Claims

Claims 1-21 are pending in this office action, claims 1, 12, 15, 18, and 21 are newly amended.

Applicant's arguments filed January 15, 2004, have been fully considered but they are not persuasive.

Rejections

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,964,162 to McAdam et al. in view of U.S. Patent No. 5,416,801 to Chouly et al.

Referring to claim 1, McAdam et al. teach a method of broadcasting television programming including:

- generating an analog video signal to provide a digitally encrypted audio signal [column 7, lines 19-21];
- digitally encrypting an audio signal [figure 8, A/D CONVERTER 160, ENCRYPTOR 162];

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- modulating a carrier with said digitally encrypted audio signal and said analog video signal [column 15, lines 51-54] ; and
- broadcasting said audio and video signals [column 15, lines 40-41].

McAdam et al do not teach using a cyclic prefix as a guard interval while spacing subcarriers adjacent to corresponding frequencies.

However, Chouly et al. disclose the method including using a cyclic prefix as a guard interval while spacing subcarriers adjacent to corresponding frequencies [column 11, lines 15-16].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Chouly et al.'s teaching of providing said guard interval as a cyclic prefix to the system/method of McAdam et al., such that the multiplexer of McAdam et al. utilizes a cyclic guard interval. One would have been motivated to modify McAdam et al.'s system/method as such in order to provide for absorption of echoes due to multipath channels.

Referring to claims 2, 13, and 19, McAdam et al. as modified teach all limitations of claims 2, 13, and 19 except for the method/apparatus of claim 1, 12, and 18 respectively, wherein modulating/demodulating a carrier with said digitally encrypted audio signal includes using orthogonal frequency division multiplexing to form symbols.

However, Chouly et al. do disclose the method/apparatus of claim 1 and 12 respectively, wherein modulating a carrier with said digitally encrypted audio signal

includes using orthogonal frequency division multiplexing to form symbols [column 3, lines 46-47].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Chouly et al.'s teaching of using orthogonal frequency division multiplexing to the system/method of McAdam et al., such that the multiplexer of McAdam et al. utilizes orthogonal frequency division multiplexing. One would have been motivated to modify McAdam et al.'s system/method as such in order to provide for a high level of protection because of the complexity of the orthogonal frequency division multiplex transmission technique.

Referring to claims 3, 14, and 20, McAdam et al. as modified teach all limitations of claims 3, 14, and 20 except for the method/apparatus of claim 2, 13, and 20 respectively, including using an inverse Fourier transform to convert a frequency domain signal back to the time domain and a Fourier transform unit coupled to said demodulator.

However, Chouly et al. do disclose the method/apparatus of claim 2 and 13 respectively, including using an inverse Fourier transform to convert a frequency domain signal back to the time domain and a Fourier transform unit coupled to said demodulator [column 4, lines 52 - 54].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Chouly et al.'s teaching of an inverse Fourier transform and a Fourier transform to the system/method of McAdam et al., such that McAdam et

al.'s system would be include an inverse Fourier transformer, coupled to the modulator and the digital to analog converter on the transmitter side and a Fourier transform coupled to the demodulator on the receiver side. One would have been motivated to modify McAdam et al.'s system/method as such in order to generate the orthogonal frequency division-multiplexing signal of the frame.

Referring to claim 4, McAdam et al. as modified teach all limitations of claim 4 except for the method of claim 3 including providing a guard interval with an orthogonal frequency division multiplexing symbol.

However, Chouly et al. disclose the method of claim 3 including providing a guard interval with an orthogonal frequency division multiplexing symbol [column 9, line 61 and 65].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Chouly et al.'s teaching of using a guard interval with an orthogonal frequency division multiplexing symbol to the system/method of McAdam et al., such that the multiplexer of McAdam et al. utilizes orthogonal frequency division multiplexing with a guard interval. One would have been motivated to modify McAdam et al.'s system/method as such in order to absorb the echoes produced by multipath channels.

Referring to claim 5, McAdam et al. as modified teach all limitations of claim 5 except for the method of claim 4 including providing said guard interval as a cyclic prefix.

However, Chouly et al. disclose the method of claim 4 including providing said guard interval as a cyclic prefix [column 11, lines 15-16].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Chouly et al.'s teaching of providing said guard interval as a cyclic prefix to the system/method of McAdam et al., such that the multiplexer of McAdam et al. utilizes a cyclic guard interval. One would have been motivated to modify McAdam et al.'s system/method as such in order to provide for absorption of echoes due to multipath channels.

Referring to claim 6, McAdam et al. as modified teach all limitations of claim 6 except for the method of claim 4 including setting the guard interval to a time equal to the worst-case multi-path delay.

However, Chouly et al. disclose the method of claim 4 including setting the guard interval to a time equal to the worst-case multi-path delay [column 10, lines 21 – 22].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Chouly et al.'s teaching to the system/method of McAdam et al., such that the system include an guard interval set to a time equal to the worst-case multi-path delay. One would have been motivated to modify McAdam et al.'s system/method as such in order to calculate/allow for the worst case scenario.

Referring to claim 7, McAdam et al. as modified teach all limitations of claim 7 except the method of claim 6 including setting the multi-path delay time about 250 microseconds.

Chouly et al. disclose setting the multi-path delay time to 32 microseconds [column 10, line 19].

Chouly et al. disclose the claimed invention except for setting the multi-path time to about 250 microseconds. It would have been obvious to one having ordinary skill in the art at the time the invention was made to set the multi-path delay time of Chouly et al. to 250 microseconds, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Allen, 105 USPQ 233.

Referring to claim 8, McAdam et al. as modified teach all limitations of claim 8 except the method of claim 7 including setting the guard interval to less than about one quarter of the symbol duration and setting the symbol time to about one millisecond.

Chouly et al. disclose setting the guard interval to less than about one quarter of the symbol duration [column 10, lines 23-24] and setting the symbol time to 128 microseconds [column 10, line 19]

Chouly et al. disclose the claimed invention except for setting the symbol time to about one millisecond. It would have been obvious to one having ordinary skill in the art at the time the invention was made to set the symbol time of Chouly et al. to one

millisecond, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Allen, 105 USPQ 233.

Referring to claim 9, McAdam et al. as modified teach the method of claim 1 wherein modulating a carrier includes using a conventional FM subcarrier and modulating said carrier with said audio signal [figure 11 and column 15, lines 32-36].

Referring to claim 10, McAdam et al. as modified teach all limitations of claim 10 except the method of claim 7 including synthesizing a carrier to form a frequency modulated subcarrier.

However, Chouly et al. disclose the method of claim 7 including synthesizing a carrier to form a frequency modulated subcarrier [column 10, lines 9-12].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Chouly et al.'s teaching to the system/method of McAdam et al., such that the McAdam et al.'s system would include a modulator and a Fourier transformer. One would have been motivated to modify McAdam et al.'s system/method as such in order to provide a secure output for transmission.

Referring to claim 11, McAdam et al. as modified teach the method of claim 1 wherein generating an analog video signal includes generating an analog video signal with a graphical overlay pattern [figure 1, VIDEO ENCODER 22].

Referring to claim 12, McAdam et al teach a television transmitter comprising:

- a graphics pattern generator that provides a graphics pattern for an analog video signal;
- an analog-to-digital converter coupled to said graphics pattern generator to receive an analog audio signal [figure 8, A/D CONVERTER 160];
- a digital encryption stage coupled to said analog-to-digital converter [figure 8, ENCRYPTOR 162];
- a modulator coupled to said digital encryption stage [figure 8, SQPR MODULATOR 170]; and

McAdam et al. do not teach a broadcaster to use a cyclic prefix as a guard interval while spacing subcarriers adjacent to corresponding frequencies.

However Chouly et al. disclose a broadcaster to use a cyclic prefix as a guard interval while spacing subcarriers adjacent to corresponding frequencies [column 11, lines 15-16].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Chouly et al.'s teaching of providing said guard interval as a cyclic prefix to the system/method of McAdam et al., such that the multiplexer of McAdam et al. utilizes a cyclic guard interval. One would have been motivated to modify McAdam et al.'s system/method as such in order to provide for absorption of echoes due to multipath channels.

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Referring to claim 15, McAdam et al. as modified teach the transmitter of claim 14 including a digital-to-analog converter coupled to said inverse Fourier transform unit [figure 9, D/A CONVERTER 212].

Referring to claim 16, McAdam et al. as modified teach the transmitter of claim 13 including a device that overlays said graphics pattern on an analog video signal [figure 1, VIDEO ENCODER 22].

Referring to claim 17, McAdam et al. as modified teach the transmitter of claim 13 including a modulator that modulates a carrier with said analog video signal with said overlaid graphics pattern [column 15, lines 51-54].

Referring to claim 18, McAdam et al. teach a television receiver comprising:

- a video detector to separate a received television signal into audio and video components [figure 12, AUDIO/VIDEO SEPARATOR];
- a device coupled to said video detector to remove the graphics overlay from an analog video signal [figure 12, VIDEO DECODER 222];
- a analog-to-digital converter coupled to said audio signal [digitizes(column 19, line 21)];
- a decryption stage coupled to said analog-to-digital converter [figure 15, DECRYPTOR 310]; and

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- a demodulator coupled to said decryption stage [figure 15, SQPR DEMODULATOR 300].

McAdam et al. do not teach a demodulator to demodulate a carrier using a cyclic prefix as a guard interval while spacing subcarriers adjacent to corresponding frequencies.

However, Chouly et al. disclose a demodulator to demodulate a carrier using a cyclic prefix as a guard interval while spacing subcarriers adjacent to corresponding frequencies [column 11, lines 15-16].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Chouly et al.'s teaching of providing said guard interval as a cyclic prefix to the system/method of McAdam et al., such that the multiplexer of McAdam et al. utilizes a cyclic guard interval. One would have been motivated to modify McAdam et al.'s system/method as such in order to provide for absorption of echoes due to multipath channels.

Referring to claim 21, McAdam et al. as modified teach the receiver of claim 20 including an digital-to-analog converter coupled to said Fourier transform unit [figure 15, D/A 314, 316].

Response to Arguments

Applicant amends claims 1, 12, 15, 18, and 21.

Applicant argues:

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1. Claims 1, 12 and 18 are not taught by McAdam et al. to include using a cyclic prefix as a guard interval while spacing subcarriers adjacent to corresponding frequencies (page 11, paragraphs 2,3).
2. Claim 2 is not taught by Chouly et al. to include "use of orthogonal frequency division multiplexing to form symbols" (page 12, paragraph 1).

Referring to argument 1., examiner agrees with applicant that McAdam et al. does not teach using a cyclic prefix as a guard interval while spacing subcarriers adjacent to corresponding frequencies; however Chouly et al. do disclose using a cyclic prefix as a guard interval while spacing subcarriers adjacent to corresponding frequencies [column 11, lines 15-16] as stated in claim 5.

Referring to argument 2., examiner disagrees with applicant. Chouly et al. disclose the use of orthogonal frequency division multiplexing to form symbols [column 9, lines 17-18].

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sara Bowes whose telephone number is 703-305-0326. The examiner can normally be reached on 7:30-4:00, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz R Sheikh can be reached on 703-305-9648. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

seb
1/30/2004


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